Appendix A

Interpretation of Comprehensive Environmental Response, Compensation, and Liability Act Criteria for the Pit 9 Remediation Project Retrieval Process

Appendix A

Interpretation of Comprehensive Environmental Response, Compensation, and Liability Act Criteria for the Pit 9 Remediation Project Retrieval Process

Table A-1 contains a detailed interpretation of "Comprehensive Environment Response, Compensation, and Liability Act" (42 USC § 9601 et seq., 1980) criteria for the Pit 9 Stage III retrieval process. This interpretation includes subcriteria and definitions of applicability to the Stage III retrieval process and the project requirement of potential applicability to other transuranic burial pits and trenches within the Subsurface Disposal Area at the Radioactive Waste Management Complex of the Idaho National Engineering and Environmental Laboratory.

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Table A. 1. Pit 9 Remediation Project retrieval method evaluation criteria.

		Sut	ocriteria			
No.	CERCLA Criteria	Level 1	Level 2	Weight	Description	Comments
1	Long-term effectiveness and permanence	_	_		_	_
la		Magnitude of residual risk.			Residual risk from contamination remaining in or returned to pit.	Contamination spread during retrieval and handling is a primary driver for the amoun of material that will be returned to the pit, including both the volume of waste and the total curies of plutonium.
						Contamination spread in waste during retrieval and handling is also a factor for other criteria.
		_	Contamination spread to clean overburden.		_	_
		_	Contamination spread within waste.		_	_
		_	Contamination spread to clean underburden.		_	
1b		Adequacy and reliability of controls.	_	NA	NA	No long-term monitoring planned. Cap over pit will be planned for all options.
2	Reduction of toxicity, mobility, and volume	_	<u> </u>	_		Criterion is applicable primarily to treatment function, not retrieval. Applicable criteria for retrieval are listed.
2a		Degree to which treatment is irreversible.	_		How easily material remaining in or returned to the pit can be retrieved and treated again in the future.	Low-weighted criteria. Additional treatment of waste not expected.

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Table A-1. (continued).

		Sub	criteria			
No.	CERCLA Criteria	Level 1	Level 2	Weight	Description	Comments
2b		Type and quantity of residuals remaining after treatment.	_		Type and quantity of secondary waste. This is a function of amount of equipment and material that will require disposal and the contamination levels on equipment and materials.	Long-term effectiveness and permanence criterion covers materials remaining in or returning to pit. Materials that may be added to the waste from retrieval operations (e.g., hydraulic fluid) also are considered.
		_	Volume of secondary waste generated.		_	_
		_	Contamination levels of secondary waste.	_	_	_
2c		Protection from contamination spread to environment.	_	_	Capabilities of contamination-control methods, including dust control methods, confinement structures, and filtered ventilation systems.	
	Short-term effectiveness	_	_	_	_	_
3a		_	_	_	_	_
		_	Ability to meet project schedule.	_	_	_
		_	Duration of retrieva operations.	_	Time the pit is open and duration of retrieval operations.	_
3b		Community protection.	_	_		_
3c		Worker protection.	_	_	Through project life-cycle—construction, operations, maintenance, emergencies, and D&D&D.	_
		_	_		_	-
			_			_

A-6

Table A-1. (continued).

Table A-1. (continu					
M. CEDGLAG	TT	bcriteria	Weight	Description	Comments
No. CERCLA Cri	teria Level 1 ———————————————————————————————————	Protection from hazardous	weigin	——————————————————————————————————————	
	_	chemicals. Protection from industrial hazards.		Includes confined space entry, fire. and explosion.	_
3d	Environmental impacts.	_	NA	_	Short-term environmental impacts from the life-cycle activities are expected to be essentially equal for all options.
4 Implementability	_	<u> </u>		_	<u>—</u>
4a	Technical feasibility.	_	_	_	_
	_	Constructability.		_	
	_	Operability.		_	_
	_	Reliability.		_	_
	_	Ease of undertalung additional remedial actions, if necessary.	NA	_	Covered under Criterion 2a.
4b	Administrative feasibility.	_	_	Ability to obtain approvals from other agencies.	_
4c	Availability of services and materials.	_	_		_
	_	Availability of workers.	_	Includes qualified operators, radiological and safety personnel, and specialists.	_
	_	Availability of utilities.	_	Water and electricity.	_
	_	Availability of disposal facilities.	_	_	This criterion is primarily for disposal of secondary wastes at ICDF. May also include possibility of disposal at other sites or back into Pit 9.

Table A-1. (continued).

	Sul	ocriteria			
No. CERCLA Criteria	Level 1	Level 2	Weight	Description	Comments
	_	Availability of equipment.	_	_	_
4d	Impact on treatment process and facility.			_	
5 cost	·	_		Life-cycle costs.	
	Construction.	_	_		-
	Operations.	_	_		
	Maintenance.		_		
	D&D&D.		_		-
6 Applicability to other TRU waste pits and trenches withm SDA	_	_	_	Includes applicability of basic processes, equipment design, and facility design to other pits and trenches to be excavated at the SDA.	

CERCLA = Comprehensive Environment Response, Compensation, and Liability Act (42 USC § 9601 et seq., 1980) D&D&D = deactivation, decontamination, and deconnnissioning

ICDF = INEEL CERCLA Disposal Facility
INEEL = Idaho National Engineering and Environmental Laboratory
OU = operable unit
SDA = Subsurface Disposal Area

TRU = transuranic

References

42 USC § 9601 et seq., 1980, "Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA/Superfund)," *United States Code*.

Appendix B Equipment and Structure Options—By Function

Appendix B

Equipment and Structure Options—By Function

The list of feasible equipment for excavation and transport of pit material and the options for confinement structures for the Pit 9 Remediation Project at the Idaho National Engineering and Environmental Laboratory, provided by the design team to initiate the VE session, are provided in this appendix. The following lists were developed through the project technology search phase.

B.I EXCAVATION

The function of this equipment is to perform excavation operations.

- 1. Backhoe (mobile with wheels or tracks, or on rails)
- 2. Front-end loader (FEL) (mobile with wheels or tracks, or on rails)
- 3. Excavator with FEL and backhoe (mobile with wheels or tracks, or on rails)
- 4. Dragline
- 5. Electric or hydraulic shovel
- 6. Bobcat
- 7. Holland loader
- **8.** Truck crane
- 9. Overhead crane
- 10 Easy miner
- 11 Continuous miner
- 12. Roadheader
- 13. Pavement cutter
- 14 Mucking machine
- 15 Highwall miner
- 16 Vacuum
- 17. Scraper.

B.2 TRANSPORT

The function of the equipment listed below is to remove material from Pit 9 and then to return material.

- 1. Excavation equipment (from above) conveys material
- 2. Forklifts (rough or smooth terrain)
- 3. Excavation equipment or forklift with trays or integrated transfer modules
- 4. Conveyors (belt, apron, roller, slat)
- 5. Overhead conveyors
- 6. Stacker
- 7. Overhead crane
- **8.** Mobile crane
- 9. Bulldozer or scraper
- 10. Dump truck
- 11. Trailer behind equipment
- 12. Rail cars
- 13. Automatic guided vehicles
- 14. Cascading conveyor cars.

B.3 CONFINEMENT

The function of the equipment listed below is to provide confinement for project operations

- 1. Large, open, primary and secondary confinement
 - a. Large, independent, primary and secondary structures over entire pit
 - b. Large structure over entire pit with primary and secondary skins on one structure
- 2. Large primary and secondary confinement with internal contamination-controlwalls
 - a. Large structure with moveable contamination-controlwalls
 - (1) Rigid and extendable
 - (2) Flexible curtains
 - (3) Rigid walls in building, and curtain in pit

- b. Large structure with permanent contamination-control walls or curtains
 - (1) Sheet piles through waste with matching permanent walls in building
 - (2) Walls in building and curtain in pit
 - (3) Walls in building, extendable into pit
- c. Small, moveable, primary with large secondary
- 3. Small, moveable, primary and large secondary
- 4. Small, moveable, primary and secondary
- 5. Very small moveable primary and secondary
- 6. No confinement.

Appendix C Option List Table from Value Engineering Session

Appendix C

Option List Table from Value Engineering Session

Appendix C contains information developed from the value engineering session for options considered for the Pit 9 Remediation Project retrieval process at the Subsurface Disposal Area within the Radioactive Waste Management Complex at the Idaho National Engineering and Environmental Laboratory. Table C-1 pertains to confining hazards. Table C-2 pertains to excavating waste and soil. Table C-3 pertains to removing material from Pit 9 and then returning it to the pit.

Table C-1. Options analysis for the confine-hazard function.

Option	Concepts to Accomplish Confine-Hazard Function	Viable?
1	Large, clear-span primary and secondary confinement over entire pit.	
	a. Large, independent primary and secondary structures over entire pit	\checkmark
	b. Large structure over entire pit with primary and secondary skins on one structure	\checkmark
	c. Low-roof concept.	_
2	Large primary and secondary confinement with internal contamination-controlwalls.	_
	a. Large structure with moveable contamination-controlwalls	
	b. Rigid and extendable (very complex)	\checkmark
	c. Flexible curtains.	
3	Rigid walls in building or curtain in pit.	_
	a. Large structure with permanent contamination-controlwalls or curtains	
	b. Sheet piles through waste with matching permanent walls in building	\checkmark
	c. Walls in building and curtain in pit	
	d. Walls in building, extendable into pit.	
4	Small, moveable, primary, and large secondary.	\checkmark
5	Small, moveable, primary, and secondary.	_
6	Very small, moveable, primary and secondary.	_
7	No confinement (includes weather enclosure and worker in sealed cabin).	_
8	Geotextile membrane with soil underneath. Mine from below.	
9	No confinement. Mine and allow underburden to collapse as work proceeds.	_
10	Underground mine and shore the roof.	
11	Grout overburden in place and support from above (truss).	
12	Secondary only.	
13	Magnetic bottle or box.	
14	Leave the waste and soil in dace	_

Table C-1. (continued)

Option	Concepts to Accomplish Confine-Hazard Function	Viable?
15	Install a concrete (structural) slab over the pit before excavation.	_
16	Small moveable fabric structure for contamination control (tent).	_
17	Foam dome that can be dissolved later with solvent.	_
18	Large (14-in.) auger.	_
19	Caissons (tube).	_
20	Double wall air supported internal structure.	_
22	Freeze the ground.	_
23	Fluidized dig face (use paraffin).	_
24	Roll out plastic to cover the ground not being worked.	<u> </u>

Table C-2. Options analysis for the function to excavate waste and soil.

Option	Concepts to Accomplish Excavate-Waste-and-Soil Function	Viable?
1	Backhoe (mobile with wheels or tracks, or on rails)	√
2	FEL (mobile with wheels or tracks, or on rails)	$\sqrt{}$
3	Excavator with FEL and backhoe (mobile with wheels or tracks, or on rails)	\checkmark
4	Dragline	_
5	Electric or hydraulic shovel	$\sqrt{}$
6	Bobcat	\checkmark
7	Holland loader	_
8	Truck crane	_
9	Overhead crane	$\sqrt{}$
10	Easy miner	_
11	Continuous miner	_
12	Roadheader	_
13	Pavement cutter	_
14	Mucking machine	_
15	Highwall miner	_
16	Vacuum	_
17	Scraper	_
18	Coat the dig face as you excavate	
19	Auger	_
20	Brush or shred at the face and use a vacuum to collect the soil	_
21	Tunnel boring machine, slurry the pit, and pump the slurry out	_
22	Chain excavator with a bucket (large ditch witch)	_
23	Remove small amounts of waste at the dig face to make sorting more efficient	_
24	Caisson with auger	_
25	Hydraulic cookie cutter	
26	Shear for size reduction	
27	Freeze and cut	_
28	Pulverize and slurry to excavate and contain contamination	
29	Membrane with access points to extract soil. Keep membrane pressed against the soil at all times. Never expose digface.	_
30	Sluce the pit with borated water or acid	_
31	Hydraulic clam shell on a crane	$\sqrt{}$
32	Clamshell idea with shredder and conveyor to treatment area	_
FEL = front-	end loader	

Table C-3. Options analysis for the transport-material hnction (remove material from pit and return material).

Option	Concepts to Accomplish Transport Material Function	Viable?
1	Bobcat	\checkmark
2	Forklifts (rough or smooth terrain)	\checkmark
3	Excavation equipment or forklift with boxes trays or integrated transfer module	\checkmark
4	Covered conveyors (belt, apron, monorail, roller, slat)	\checkmark
5	Overhead conveyors	
6	Stacker	_
7	Overhead crane (with clamshell, cookie cutter, or grapple)	\checkmark
8	Mobile crane	\checkmark
9	Bulldozer or scraper	_
10	Dump truck	_
11	Trailer behind equipment	_
12	Rail cars	_
13	AGVs	\checkmark
14	Cascading conveyor cars	_
15	Lazy Susan or revolving door	_
16	Backhoe bucket or big fork with slots to screen out dirt as it digs	_
17	FEL	\checkmark
18	Remove waste from above and return the waste from below	_
19	Waste egress tunnel	_
20	Enclosed conveyer	_
21	Linked sausage (cookie cutter in sleeves)	_
22	Funnel concept: box under a funnel with directed airflow	_
23	FEL with a flip-over lid	_
24	Pneumatic transfer	_
25	Potato auger and conveyor that digs and transports	_
26	Monorail system	_
27	Slurry, pump, and pick up large objects	_
28	Use an airlock or interlock to receive waste and boxes from treatment	_

FEL = front-end loader

Appendix D Subteam Tables

Appendix D

Subteam Tables

The table in this appendix contains options and scores assigned to the criteria evaluated by the value engineering subteam.

A	LARGEOPENP	RI[MARY - ABOV	Æ GRADE RET	FUEVAL				Marcl	i 25, 2003
					CRITE	RIA & WEIGHT			
ITEM	EXCAVATION	TRANSPORT	Floor-Waste Boxes-Dirt	Cross Contamination	Contamination Spread	Implement- ability	Cost, Life Cycle	Schedule Risk	SCORE
				2	5	3	3	4	
A	Backhoe	FEL	Backhoe-	2	2	3	4	5	55
handa alara da comunida girika era ka disara	(both dribble)		forklift-FEL	FEL can't take all OB -	x-fert in lg bldg no confine	Clearance problems, FEL	d/d a bit higher than small	no bldg move	
	(small bucket more x- contamination)	with a basked cheef T-may within any and any angles could be the cheef	objet	waste won't support weight	areas W www.	tx on uneven ground	bldg, but no d/d to move	gett frei der der fil die bestellt der verste der der der der der der der der der de	о подовожно по страновно и шать
В	Backhoe > OH crane to rolle conveyor		4	3	4	3	5	64	
		conveyor	crane-Dirt Bin	less dribble, but small scoop		big crane - move lg objects	more equipment	building	
С	Backhoe > Box	forklift	Backhoe- forklift-FEL	3	2	3	3	5	54
D	Backhoe > Box	Backhoe > Roller	backhoe-OH	4	2	0	3	5	0
		Conveyor	crane-Dirt Bin	**		backhoe is setting box on interface		han	mg Sharme Sharmond Sharpasarmannigano.
						conveyor is very difficult			
Е	Backhoe > Box	forklift > Roller	backhoe-OH	4	3	2	3	5	58
representation of the second	and are the control of the control o	Conveyor	crane-Dirt Bin		anglende de construir que de l'arthre de l'arcelle de l'a	forklift setting box on interface	riche deutschie zu der weißen bezeicht zu der verwende deutsche zu zu zich verzeichte deutsch aus der deutsch	all-terms thin the training areas in the training and and training and an articular and articular and articular and articular and articular and articular and articular	egi ja vala 190 kina muununga ekapipunittii) vattaa opa opa mis väysy
	,					conveyoris difficult			

A	LARGE OPEN P	RIMARY - ABO	VE GRADE RET	RIEVAL	Marc	h 25,2003			
	The state of the s		or configuration and	CRITERIA & WEIGHT					
ITEM	EXCAVATION	TRANSPORT	Floor-Waste Boxes-Dirt	Cross Contamination	Contamination Spread	Implement- ability	Cost, Life Cycle	Schedule Risk	SCORE
	· vone your minutes	Maria American	(college)	2	5	3	3	4	
F	Backhoe > Backhoe Rehandle	Hopper & Belt	Backhoe- forklift-	2	1	1	3	5	41
		Conveyor	backhoe				size of objects		
G	OH crane with Hyd clamshell & Grapple	Hopper / Conveyor	Clamshell-OH crane-Dirt Bin	2		1	3	5	41
H			Clamshell-OH crane-Dirt Bin	2	3	1	3	5	51
				poor control, dribble				terf eft 19-6 felt de killebelen followe vil delt desse er verseemeelte ses en sanage	Market (I.), And Milliant as endogeneering (figure (I.), (I.) of projection (III)
I	Mob Crane with Hyd clamshell & Grapple	Box / Crane / Conveyor	Clamshell-OH crane-Dirt Bin	1	1	1	3	3	31
J	FEL/Backhoe	FEL/Backhoe	Backhoe-	1	. 1	2	4	5	45
***************************************	Combination	Combination	forklift-FEL	small machine		Pit mente Primite la mediamente com una mana mana mente una menuna menuna mengenjuman, ganganjum		Constitution of the Management of Constitution (Constitution of Constitution o	
K	FEL/Backhoe Combination	Box / Crane / Conveyor	Backhoe- forklift-Dirt Bin-FEL	1	1	2	3	5	42
L	OH crane Z-mast - Cookie Cutter	Box / Crane / Conveyor	Cutter-OH crane-Dirt Bin	-	-	0			0

					CRITER	A & Weight			
ITEM	EXCAVATION	ON TRANSPORT	FLOOR-WST. BOXES-DIRT	Cross Contamination	Contamination Spread	Implement- ability	Cost, Life Cycle	Schedule Risk	SCORE
	最高的"Chapter and Chapter" a place of the following sequence of the sequence of the Chapter of th			2	giran masumum saasa jala sakkaris karis karis saana masumum menen menengan S	3		4	a protesta de la compositiva della compositiva della compositiva de la compositiva della compositiva d
A	FEL & Backhoe	FEL	FEL-forklift-FEL	gentioneen in work on enter one of the section of t	gammasia pubakhnynia huuna nagi mannisi miaranismia rii aranishi sassa daysi asu 3		4	Sold of the second seco	72
	(both dribble)	en de la companya de	The state of the s	igeologicherteit beginn o die installitzen in departies delta auch 2000 del Al-Mill (1982) es immeriori dyssen de an est	and and the contract of the co		eromonistano esse un una apona se presente infratore en su mise en menera.		School and the first of the second of the se
В	Backhoe > 5x5x10 box	OH crane to roller conveyor	backhoe-OH crane-Dirt Bin	1	1	4	3	5	48
С	Backhoe > Box	forklift	backhoe-forklift- Dirt Bin-backhoe	1	1	4	4	5	51
D	FEL & Backhoe > Box	forklift	backhoe-forklift- Dirt Bin-backhoe	тем привентурн официприва движдендо протов об объемосной описатом, до сили вымос З	2	To contract the contract to th	grangini menerakan seringga kendelah kendelah di selah d B	5	54
E	Hydraulic Shovel > Box	forklift	Sh'vl-forklift-Dirt Bin-Shvl	3		A service of the serv	3	5	54
F	Hydraulic Shovel > Box	OH crane to roller conveyor	Sh'vl-OH crane- Dirt Bin	анс петарна конрисков, информация, информациа, информация, информациа, информ	granici pi de la consecçució con accompular, i indirecidad del del del consecuenció de el		3	5	
G	Bobcat Loader	Bobcat Loader	Bobcat-Forkloft- Backhoe	gerlagtischen zusächen dem kennen zusätzung eutgewahren der verörlichen in die ein der ein der verangewahren. I	analijanen riinaan ree, ee eeliy eeliye eeliye eeliye isaan untaraan ahaan kaan ahaan ahaa ka ka kaasaa ka ka I	demand at course the manufacture of the course of the cour	3	4	35
H	Bobcat Loader	forklift	Bobcat-Forkloft- Backhoe	тини доминический выпражения выстрания выпражения выпражения выпражения выпражения выпражени — Применнительный выпражения выпражения выпражения выпражения выстражения выпражения выстрамения выпражения выпражения выпражения выпражения выпражения выпра	graduat distribution in manocamin proprior program (program that in the program of the consequence of the co	entropy contraction of the contr	antiapalenterprojections, populario, consequinte consequinte consequinte consequinte consequinte consequinte consequinte consequence conse	4	35
I	FEL/Backhoe Combination > Box	forklift	FEL/backhoe- forklift- FEL/backhoe	nadigina enimina e enemperatura (in enimina enimina enimina enimina enimina enimina enimina enimina enimina eni 1	от в тот не предменять прости в предменять по по тот се чество по	2	ent oderlich -erten en en versegen bereigen der der die der der der der der der der der der de	5	45
J	FEL/Backhoe Combination > Box	OH crane to roller conveyor	FEL/backhoe-OH crane-Dirt Bin	темененический под интелева и под	in market menter er kalansistiske discretegens i til kalansiske kansangen mådagsvarige er en en engel	2	3	5	42

7

В	LARGE OPEN PRLMARY - BELOW GRADE RETRIEVAL									
	The American	T-Date in minde	The second secon	CRITERIA & Weight						
ITEM	EXCAVATION	TRANSPORT	FLOOR-WST. BOXES-DIRT	Cross Contamination	Contamination Spread	Implement- ability	Cost, Life Cycle	Schedule Risk	SCORE	
				2	figment in the transmission contracts of the contract of the c	3	3	4	all probability in Christian III de travelle and a commence of the	
K	FEL/Backhoe Combination	FEL/Backhoe Combination	FEL/backhoe- forklift- FEL/backhoe	1		2	4	5	45	

C	LARGE OPEN PRIMARY WITH	RIMARY WITH D	H MOVEABLE WALLS	8				March	March 25, 2003
in contract of the contract of	More duct work will be needed and 1000 cfm per 2X2 filter (4 sq ft). Us dirt moist to a significant depth. (Du away as a driving surface. Ability to with HVAC system. Getting soil to	rill be needed and wifilter (4 sq ft). Use inficant depth. (Dust surface. Ability to com. Getting soil to 15	More duct work will be needed and will be more complicated due to moveable walls. 10-11 air changes per hour may be needed. 360,000 cfm. 1000 cfm per 2X2 filter (4 sq ft). Use different containment to provide relief for HVAC.permeability of over burden is low. Hard to keep the dirt moist to a significant depth. (Dust issues) Top 1 or 2 in. can be kept wet, but equipment will stirr it up. May have to bring in rock right away as a driving surface. Ability to control contamination to immediate area that is open is preferred. May need a conditioning system along with HVAC system. Getting soil to 15% is the goal, but air in building will dry it out. Humidity levels and sprays will have to be used.	d due to moveable v to provide relief for can be kept wet, bu o immediate area th	valls. 10-11 air chan HVAC.permeability it equipment will stin at is open is preferre t out. Humidity leve	ges per hour may of over burden r it up. May hav d. May need a cc ls and sprays wil	y be needed. 30 is low. Hard to e to bring in ro anditioning sys Il have to be us	60,000 cfm. Steep the sek right stem along sed.	
					CRITERI	CRITERIA & WEIGHT			STATE OF THE STATE
HEX	EXCAVATION	TRANSPORT	Floor-Waste Boxes-Dirt	Cross	Contamination Spread	Implement- ability	Cost, Life Cycle	Schedule Risk	SCORE
and phase control of the phase				7	S		e	4	
	-	particular victory and							And American Company of the Company
ABOVI	ABOVE GRADE	The property of the control of the c			manuski udako radaka kata kata kata kata kata kata kata	And the second s	Constitution of the Consti	denote the second design of th	Olytholyddwritewaraetholyddyddiglachirathrafae
A	Backhoe (on top)	PET.	Backhoe-forklift- FEL		S and the second	2	C		**************************************
		(Below grade)			dentiforweit "Walcondovertitas datas pada poud esta dentiformenta dentiformenta dentiformenta dentiformenta de				
æ	Backhoe > 5x5x10 box	OH crane to roller conveyor	backhoe-OH crane- Dirt Bin					\$	63
						Two cranes are needed. Complicated			gigt of a make gill worst gill programs at a gal-
D.	Backhoe > Box	forklift	Backhoe-forklift- FEL					S.	96
					forklift kicks up dust	Polymorphis internation Associates in accordance to the contract of the contra			establishment in a second public protection of the second public protection of the second public protection of the second public public protection of the second public pu
<u>a</u>	Backhoe > Box	Backhoe > Roller Conveyor	backhoe-OH crane- Dirt Bin	4	2	0			0

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Ü	LARGE OPEN	PRIMARY WITH N	LARGE OPEN PRIMARY WITH MOVEABLE WALLS	S			March 2	March 25, 2003
					Hard to pick up a box with a backhoe and putting it on a conveyor is hard.		general programme and a construction of the co	
ш	Backhoe > Box	forklift > Roller Conveyor	backhoe-OH crane- Dirt Bin	4		n	8	0
		Has to go through the wall.			May damage conveyor with forklift. 20,000 lb			
Et.	Backhoe > Backhoe Rehandle	Hopper & Belt Conveyor	Backhoe-forklift- backhoe	73		M	S	0
	Dumps to a pile.pick up by another backhoe.	Curtins don't help you unless the conveyor is covered.			Belt conveyor has to be continuous and will have dribble.			
ט	OH crane with Hyd clamshell & Grapple	Hopper / Belt Conveyor	Clamshell-OH crane-Dirt Bin			C	S	0
Organization of the Control of the C	Crane is outside the curtin.				No box and belt conveyor. Have to go through the walls and run the length of the building.			
I	OH crane with Hyd clamshell & Grapple	Box OH crane	Clamshell-OH crane-Dirt Bin	7	The state of the s			51

33	antalanian managaran and managaran ana ana ana ana ana ana ana ana ana	0		47	52		0
March 25, 2003				A A	T .	Territorial designation of the control of the contr	
rch 2	gerhannetssternen von der sterke general "Sterken von der der det einstelle kantigeste de gelakte von zeine Lu	m		s	'n		
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endantski sk	Private Billians (New Scriffs - Art Care Care Care Care Care Care Care Care	φ	The production of the second consequence of	4		*******************************	•
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				Service and the service and th	40-400-4000-10-10-10-10-10-10-10-10-10-10-10-10-	-	i.
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	to ge hell to describe to me is tha to rer		nough for e cra		- Additional and a second a second and a second a second and a second	er are ve d in.	
	Hard to get the clamshell to dig and get bulky objects. Hard to move objects that need to remain in place.		Not enough room for mobile crane.			Smaller area to move around in.	
	teritari esamentri utrati erratigat para errigat y etropo priessor y etroposito, poste estroposito en por encengaj gand	<u> </u>		7	(C)	W2 40 00	
	Can dribble over dirty area.	-21 g V					
	area.						
	Can dribbl dirty area.						
	од наставляет в 1820 год 1810 281 год на точко можен в соможно замож очено груга в так голодого домого домого	-		-	porter construction of the		
	- Para Para Para Para Para Para Para Par						
			f. S.,				4
	kritiget in 1890 billio dona (1855 in 1864) konservus servesti shirkit ili kilomana qilimin sinci nazasuve kilomana pu anu mazasu -		indicine to making per government of the control	.	eo so tratamento reco		
E &		Bir GH		orklif	orklif 3L		crane
\BL				ioe-fc	oe-fe in-Fl		H H
)VE.	-	Clamshell-OH crane-Dirt Bin		Backhoe-forklift- FEL	Backhoe-forklift- Dirt Bin-FEL		Cutter-OH crane- Dirt Bin
H MOVEABLE WALLS		J 0		14 page 15.	14 14	mathematique de agrecia e consumera e coloco de discoloco de coloco de coloco de coloco de coloco de coloco de	
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RY .	SCORPAGE AND SCORP	S S		3ackł inatie	Cran 3yor	e de la companya de l	E S
IMA		Box / Crane / Conveyor		FEL/Backhoe Combination	Box / Crane / Conveyor		Box / Crane / Conveyor
Y PR		THE PROPERTY OF THE PARTY OF TH	ng collectivity (the good reliable articipating collection)		ш <u>)</u>		s C
)PE	- Andrews and the second	e with		on on	noe om		Z-ma effet
8		Cram		Back inati	Back inati		rane. kie C
LARGE OPEN PRIMARY WITI		Mob Crane with Hyd clamshell & Grapple		FEL/Backhoe Combination	FEL/Backhoe Combination		OH crane Z-mast - Cookie Cutter
							9 .1.
ن	es acceptance of the control of the	1	-	_	×		ت
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	ВВ		AA	BEL
	Backhoe > 5x5x10 box		FEL & Backhoe	BELOW GRADE
	OH crane to roller conveyor		FEL.	MINA WITH A
	backhoe-OH crane- Dirt Bin		FEL-forklift-FEL	GRADE GRADE
When you dump into an open box, you generate dust.	2	Idea: Recirculate the air within the building and don't connect the ducts. All you do is control a boundary that is not a primary. You don't have to meet the same standard. (Brent Helm) It is just a contamination control barrier. Big moveable dust collector.	001-10-11-11-11-11-11-11-11-11-11-11-11-	
Complicated and series of drop-off points for the box.	Page Conference of the Confere	Could use a fabric roll-up door or use an air-lock. Bit more complicated.	4	
H II: C M C B		manuscripturus appar and annicational annica statement an	4	
Boxes coming in and out and crane handling and maintenance.	2		S. S	March 25, 2003
V martin de la constanti de la	38		74	5, 2003

C	LARGE OPEN P	RIMARY WITH	MOVEABLE WAL	LS				March	125, 2003
CC	Backhoe > Box	forklift	backhoe-forklift- Dirt Bin-backhoe	1	2	3	4	5	53
						Have to go through walls, but should not b e an issue.			
DD	FEL & Backhoe > Box	forklift	backhoe-forklift- Dirt Bin-backhoe	3	de la company de	3	3	5	59
	Big loader and small backhoe loading work. Backhoe helps where needed.			Big bucket to do digging.	Have walls in b uilding.	Same as CC.	eg de monte de de l'inscription de de d'inscription de de de l'inscription		
EE	Hydraulic Shovel > Box	forklift	Sh'vl-forklift-Dirt Bin-Shvl	3	The reserve of the re	3	3		59
						Same forklift going through door. Loading box with shovel.			general control of the control of th
FF	Hydraulic Shovel > Box	OH crane	Sh'vl-OH crane- Dirt Bin	3	4	2	3	5	
All Green (1887) in a silven associated asso						series of blisters and air locks. Hard to use a crane with moveable walls.			
GG	Bobcat Loader	Bobcat Loader	Bobcat-Forkloft- Backhoe	1	2	And selection of the se	3	4	40
нн	Bobcat Loader	forklift	Bobcat-Forkloft- Backhoe	mentilgen til symboliser mentilge vilge avskyttere kan ingstå aktiviste avskatteriore meter entere meter enter I	2	1	3	4	40

C	LARGE OPEN	PRIMARY WITH N	OVEABLE WALI	.S				March	25, 2003
	FEL/Backhoe Combination > Box	forklift	FEL/backhoe- forklift- FEL/backhoe	1	2	2	4	5	50
						You don't have a good piece of equip to handle big pieces of equipment. Working around large objects in place. More complicated with walls in place.			
IJ	FEL/Backhoe Combination > Box	OH crane to roller conveyor	FEL/backhoe-OH crane-Dirt Bin		2	1	3	5	44
KK	FEL/Backhoe Combination	FEL/Backhoe Combination	FEL/backhoe- forklift- FEL/backhoe	ger are to a construction of the construction	2	2'	4	5	50
						Walls don't make this harder or easier.	n. Negerida in de seu autor-mot o del mise autoriori policia del motoriori del motorio		ornanie drawnie in medicze pod pod przed pod pod pod pod pod pod pod pod pod po

D	LARGE OPEN P	RIMARY WITH P	ERMANENT WAI	LLS				Mar	ch 25, 2003
	permanent wall is the benefits. Could return permanent walls, the	pasically same as on arn material to Pit as aren like the moveab	above grade with por e building. Two air s a separate operation le walls. This is easi to permanent walls	systems, but only one n. Requires two sets er to build and reduc	e as to run at a time of equipment (clear es size of air systen	. Does give you n and dirty). If y	some flexibil ou divide it in	ity and some ito four section	LCC ons with
обское подделения до поведения в поведения	Easier HVAC system than movable, smaller than open primary.		This is essentially sets of non-portable	performing the proje e equipment.	ect 3 times, with 3			e o transmission and an analysis of the second of the seco	
ngganitariga an europa y nazinga misar ng					CRITERL	A & WEIGHT		······································	golden (Later - report sometimente mentralista mentralis som
ITEM	EXCAVATION	TRANSPORT	Floor-Waste Boxes-Dirt	Cross Contamination	Contamination Spread	Implement- ability	Cost, Life Cycle	Schedule Risk	SCORE
				and the subsection of the subs		Berger of the contract of the	3	4	
ABOVI	GRADE		and the state of t	districtive de la companya de companya en casa actività en en casa de companya en casa de casa	dur en caminativa de la describión de la describión de la calenda de la describión de la calenda de la definida	garagan garaga		O timo de la Personal de desenvolución de la constanción de se	
A	Backhoe	FEL	Backhoe-forklift- FEL	granistici cum tra con in transis in transis del con transis del con	proprieta in the first in the f	en er en	4	nro996 theird music has till til tental tregt (500 kjetnia egi kron mingsheri yagi tab	49
	(both dribble)	фетополичення от чення от	en general call and the deleter and popular in the call and the call a	and and the second	errorativa (digina errora in devenus and in decements in increases and gibbs of gibb	tough to get equipment to drop station		Энрого (1550-о-на Анголого) дей до Адайн него не ороно радон, най	
	(small bucket more x- contamination)	gill of the state		gen der erformen in verwer in verwer verwer verwer verwer de de verwer de de verwer ve	and the contract of the contra		ran de mercitado mende de meno espera tenor menor secunda composem e apacem	от объекть на выполнения в общений выполнений в общений	and the second s

Pit-9, Stage 3 Value Engineering

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Ð	LARGE OPEN PRIMARY WI		TH PERMANENT WALLS	TES				Marcl	March 25, 2003
m	Backhoe > 5x5x10 OH crane box	OH crane	backhoe-OH crane-Dirt Bin	4	8	3	C	2	61
		need 3 cranes/3 delivery points							ACCIDING A COLOR OF THE COLOR O
Ü	Backhoe > Box	forklift	Backhoe-forklift- FEL			7			51
Q	Backhoe > Box	Backhoe > Roller Conveyor	backhoe-OH crane-Dirt Bin	4	2	0	•	\$	0
						transport with backhoe prob			
m	Backhoe > Box	forklift > Roller Conveyor	backhoe-OH crane-Dirt Bin	4	m		m		SS.
[14	Backhoe > Backhoe Rehandle	Hopper & Belt Conveyor	Backhoe-forklift- backhoe	2		American and the second	m		4
Ð	OH crane with Hyd clamshell & Grapple	Hopper / Conveyor	Clamshell-OH crane-Dirt Bin	2		Control of the Contro			A Linear security source common contractions of the Contraction
Ш	OH crane with Hyd clamshell & Grapple	Box / Crane / Conveyor	Clamshell-OH crane-Dirt Bin	2					S I
and the second s	Mob Crane with Hyd clamshell & Grapple	Box / Crane / Conveyor	Clamshell-OH crane-Dirt Bin	The state of the s			C	8	31
	FEL/Backhoe Combination	FEL/Backhoe Combination	Backhoe-forklift- FEL	·	-	panadidi opi sha asa	4 }		4
×	FEL/Backhoe Combination	Box / Crane / Conveyor	Backhoe-forklift- Dirt Bin-FEL	Jamel		2	8	\$	42
T	OH crane Z-mast - Cookie Cutter	Box / Crane / Conveyor	Cutter-OH crane- Dirt Bin			0			O

Q	LARGE OPEN PI	LARGE OPEN PRIMARY WITH PERMANENT WALLS	ERMANENT WAI	STS				March	March 25, 2003
	All above grade with 3 walls in bldg & sheet piles in pit								
BELO: that slid	BELOW GRADE: May drive in sheet piles, but would have to leave them out in an area and use a curtin for a below grade door. Fabric roll-up door or a door that slides down after you have dug.	ve in sheet piles, but ive dug.	would have to leav	e them out in an are	a and use a curtin fe	r a below grade	door. Fabric ro	Il-up door or	a door
AA	FEL & Backhoe	FEL	FEL-forklift-FEL						0
	(both dribble)								
BB	Backhoe > 5x5x10 OH crane to box conveyor	OH crane to roller conveyor	backhoe-OH crane-Dirt Bin	The state of the s	MI COMPANIENT IN THE LANGUAGE OF THE LANGUAGE		The second control of	Parameter of the first of the f	33
੪	Backhoe > Box	forklift	backhoe-forklift- Dirt Bin-backhoe			0			0
eg.	FEL & Backhoe > forklift Box	forklift	backhoe-forklift- Dirt Bin-backhoe			0			0
田田田	Hydraulic Shovel > Box	forklift	Sh'vl-forklift-Dirt Bin-Shvl			0			0
ŦŦ	Hydraulic Shovel > Box	OH crane to roller conveyor	Sh'vl-OH crane- Dirt Bin	3	3		-	\$	47
8	Bobcat Loader	Bobcat Loader	Bobeat-Forkloft- Backhoe			0			0
HH	Bobcat Loader	forklift	Bobcat-Forkloff- Backhoe			0			0
Ц	FEL/Backhoe Combination > Box	forklift	FEL/backhoe- forklift- FEL/backhoe						0
=	FEL/Backhoe Combination > Box	OH crane to roller conveyor	FEL/backhoe-OH crane-Dirt Bin						33

D	LARGE OPEN PRIMAR	Y WITH	PERMANENT WALLS				March 25, 2003
KK	FEL/Backhoe FEL/Backhoe Combination Combin		FEL/backhoe- forklift- FEL/backhoe			0,	0
Sectional		pment bec	either need to ramp through the comes infeasible. Transporting ge over other options.				
eritarini osateko estasuta eta asalea	Below grade option would	score abou	at the same as one large primar	y if only 1 wall is used	t.	ne win yn Aldere og sie Gibb de 1940 op Armenhad re Groen Laguer de Groen (эт общин нь цього жей о тэм этом цага цага самон дэг эт самон осорон цага самон дага самон дага самон дага сам С
New Political and Administration (Constitution of Constitution	Scenario 1: Remove 3' of over for the section.	verburden.	. Walls hung from structure an	d extending down into	material. Once yo	u remove the v	vaste, you have lost the seal

l E	SMALL MOVEA	BLE PRIMARY	- LARGE SEC	CONDARY				Mar	ch 25, 2003
	mobile crane. A cr them. Whereever y before you take ou of operations. Slou one side of the pit. come in from the N area. Have to did it closing 60' of the a	ane has to be part you come out, you t of area. With no aghing is an issue. Hard to make this North by Pit 7 due nto clean overburdarea before the mo	of the moveable be need a series of a sheet piles. Have Have to be able to building bigger- to obstructions. Colled to secure the way we.****For this co	ouilding. Small move irlocks. Crane is par angle of repose to do get the waste back get over the 2.5' pile concern: Hard to sea walls of the primary evaluation assume to	with boxes can be peable primary either tof the primary. Boxeal with. Lining the cin. Have to prepare to and rails that are all the primary. Have to a curtin of the primary to building is about ove to keep excavations.	has its own airloc has to be wrappe excavated area is he floor. Building ready there by Pit o use a liner that mary. Idea: Have	k or you need ed or put into difficult in the g may have to 7. Conclusion is secured in the a 120' building	a series of another box beginning hang over n: Have to he clean g and	
pro-lance energy-energy agency and cypic partie	garina and an annual and an annual and an annual and an an an annual and an a				elektrick communication of the following and appropriate for the section of the first	A & WEIGHT	errementales (mag 162-sentral les 1684 milles des des transpours de 1685)	ation discharies on the sine and the other based were two ag	THE PROPERTY OF THE PROPERTY O
ITEM	EXCAVATION	TRANSPORT	Floor-Waste Boxes-Dirt	Cross Contamination	Contamination Spread	Implement- ability	Cost, Life Cycle	Schedule Risk	SCORE
energina netana panahapané kanan Kanangina netana panahapané kanan	and the state of t	en e		2	5	3	3	4	
ABOV	E GRADE	g gangangangangangangangangangangangangang	AND THE STATE OF T	e grande de la companya de la compan		Burgerescherneibusch weiter Stateplaten 200 seu zu zugleber zu Stateplaten in Stateplaten.	eg Berganis egyptimen, and a finished by plant reference plant properties and a constant and an analysis of the constant plant reference plant plant reference plant pla	が では、 では、 では、 では、 では、 では、 では、 では、	
Α	Backhoe	FEL	Backhoe- forklift-FEL	2	2	() 4	2	2 0
PAY200-1140-0	(both dribble)								
and the second s	(small bucket more x- contamination)		The management of the property		формовического высот выдо что отворить выдо в довержения достов до довержения выдовать выдовать выдовать выдова	in the light of the property of the second s		engane en e	

April 2003

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E)	SMALL MOVEABLE PRIM	ABLE PRIMARY	ARY - LARGE SECONDARY	CONDARY				March	March 25, 2003
æ	Backhoe > 5x5x10 box	OH crane	backhoe-OH crane-Dirt Bin	4	4	2	2	2	84
				Above grade. Few dribbling. Big loads and large bucket.	Relatively smaller HVAC system.	Moveable walls and liner. More risk of an accident, portable HVAC system. Has to operate some while moving. Have to keep things negative while you are movine.		Coordinats with treatment. Moving the building and proving it is sealed.	
C	Backhoe > Box	forklift	Backhoe- forklift-FEL		C		2	7	38
		Maneuverability issues. Extra equipment.			Building helps and Harder to forklift hurts. Driving over dirt. forklift.	Harder to maneuver the forklift.	and for many control and the second s		The transaction of the state of
D	Backhoe > Box	Backhoe	backhoe-OH crane-Dirt Bin	3	Cl	0	7	CI	0
	Backhoe > Box	forklift	backhoe-OH crane-Dirt Bin	3 Like C except return to Pit.	£		2	S.	3.8
±	Backhoe > Backhoe Rehandle	Hopper & Belt Conveyor	Backhoe- forklift- backhoe	7	7	0	a	2	0

1	SMALL MOVEA	SMALL MOVEABLE PRIMARY - LARGE SECONDARY	- LARGE SECO	ONDARY				March	March 25, 2003
	Dump in a pile.					Cant have a continuous belt conveyor with a moveable building.			
Ð	OH crane with Hyd clamshell & Grapple	Hopper / Belt Conveyor	Clamshell-OH crane-Dirt Bin	2			7		26
	The shoot would have to be part of the primary.			ад намеждения в оборно в намеждения от на выводя на населения от населения в населения в населения в населения	Dealing with a grapple and it is messy. Hard to keep conveyor sealed.	The interface of trying to bring material to conveyor and keeping conveyor sealed in its own primary won't work. Have to send people in to do this.			
Salari Programa de Allemandra de de	OH crane with Hyd clamshell & Grapple	Box / Crane / Conveyor	Clamshell-OH crane-Dirt Bin	2	2		2	7	31
	Crane may have to be outside of primary.	Same as B	Same as G						MAN (French professional profes
_	Mob Crane with Hyd clamshell & Grapple	Box / Crane / Conveyor	Clamshell-OH crane-Dirt Bin			0	7	2	0
-	FEL/Backhoe Combination	FEL/Backhoe Combination	Backhoe- forklift-FFL			0	2	2	0
X	FEL/Backhoe Combination	Box / Crane / Conveyor	Backhoe- forklift-Dirt		2	2	2	2	32

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E	SMALL MOVE	ABLE PRIMAR	Y - LARGE SECONDARY				March	25, 2003
			Him-FEL					
	a service serv	- wie+ was formation		FEL and building			Sharingan assumes to their seasons and seasons and seasons assume the seasons and seasons as the	
L	OH crane Z-mast - Cookie Cutter	Box / Crane / Conveyor	Cutter-OH - crane-Dirt Bin	•		0 -	-	0
BEL	OW GRADE: Anyth		equipment with transport cannot be	done below grade with a	moveable building	ş.		
AA	FEL & Backhoe	FEL	FEL-forklift- FEL	5 3) <u>4</u>	Ś	n
gragarian and an	(both dribble)				Section of the sectio			
BB	Backhoe 5x5x10 box	OH crane	backhoe-OH crane-Dirt Bin	1	Secretaria ou sous	2	2	32
CC	Backhoe > Box	forklift	backhoe- forklift-Dirt Bin-backhoe	1		2	2	0
		and the state of t			Mobile equipment below grade is impossible.			
DD	FEL & Backhoe > Box	forklift	backhoe- forklift-Dirt Bin-backhoe	3 2		2	2	0
EE	Hydraulic Shovel > Box	forklift	Sh'vl-forklift- Dirt Bin-Shvl	3) 2	2	0
FF	Hydraulic Shovel > Box	OH crane	Sh'vl-OH crane-Dirt Bin	3 4		2	2	
GG	Bobcat Loader	Bobcat Loader	Bobcat- Forkloft-	1		2	2	0

E	SMALL MOVE	ABLE PRIMAKY	- LARGE SEC	ONDARY				March	125,200:3	
			Backhoe							
HH	Bobcat Loader	forklift	Bobcat- Forkloft- Backhoe	1	1	0	2	2).	
П	FEL/Backhoe Combination> Box	forklift	FEL/backhoe- forklift- FEL/backhoe	1	1	0	2	2	0	
JJ	FEL/Backhoe Combination > Box	Town	FEL/backhoe- OH crane-Dirt Bin		Ĺ	2	Control of the contro	2	3:2	
KK	FEL/Backhoe Combination	FEL/Backhoe Combination	FEL/backhoe- forklift- FEL/backhoe	1	1	0	2	2	0	
edithinin dorztlicznickyczyci				MATERIAL PROTESTOR CONTEST SECURISES AS A CONTEST AND A PROTEST AS A CONTEST AS A C						
	Scenario 1: After the building moves, the primary is a liner or flexible cover. Scenario 2: Move the building and extend the walls and have a flexible seal at the bottom.									
Anighor Annual and an and an angular	Scenario 3: You are always going to overlapping between 30 and 60 ft. You have to fill in the Pit before you move. May result in more moves (5-6 times at 90'). 120' building.									
Comparation of the Comparation o										